Can we trust cancer statistics?

Epidemiological studies show that cancer incidence varies greatly from country to country, being low in the third world and increasingly high in the west. Those who suggest that cancer is also a disease of the spirit need only point to Hungary - the country with the worst cancer rate also has the world's highest suicide rate.

Cancer incidence also varies widely from area to area within a country. Most people assume that breast cancer incidence, to take one example, is evenly spread throughout the population. But this is not true. Anyone seeking to explore this subject should consult the Atlas of Cancer Incidence in England and Wales 1968-1985 (OUP, 1994). Here the reader will find that in Leicestershire breast cancer in women over 45 is more than 20% higher than the national average while in Cumberland it is more than 20% lower than average. Women in Cumberland should not pat themselves on the backs however. Incidence of malignant melanoma among Cumberland females is more than 50% higher than average while just across the Pennines in Durham incidence is more than 30% lower than average. Curiously, the incidence of malignant melanoma among Cumberland men is 20-35% lower than average. How can we explain these odd variations?

> The difference is far too big to be explained by genes. We have to take a look at diet, at excess calories. It may be that diet is linked in a very complicated way.(Dr Gordon McVie, scientific director of the Cancer Research Campaign in The Independent (25 March 1994)

This kind of research reveals that 70-90% of cancers relate to life-style and environmental factors, only 5-10% is gene related. Such research is clearly valuable because prevention is better than cure. A person who doesn't get cancer doesn't have to be treated with expensive, painful and potentially health-devastating methods. If we can find out what circumstances are associated with higher oncidences of cancer, we should, in theory, be better off.

The problem with cancer statistics

If you want to look on the bright side of things it is possible to conjure up figures that show that there has been significant progress in the battle against cancer. The National Cancer Institute publishes a chart of five-year Relative Survival Rates. (percent). The US figures up to 1989 for the top ten killers is given below. These figures apply to the white population. Figures for blacks are significantly worse, though still showing improvements:

Five-year relative survival rates

	1960-63	1970-73	1983-89
Melanoma	60	68	84
Oral	45	43	54
Lung	8	10	13
Breast	63	68	81
Cervix	58	64	69
Pancreas	1	2	3
Leukemia	14	22	39
Liver	2	3	6
Ovary	32	36	40
Colon & Rectum	43	49	60
Prostate	50	63	79

Bladder	53	61	80
Esophagus	4	4	10
Stomach	11	13	17

These figures show clear improvement. What's the problem? The problem is that five-year survival does not amount to cure.

The incidence of cancer depends upon accurate diagnosis. Improved screening programmes tend to raise incidence figures because they lead to the detection of many `early cancers' which are either not cancers, or they find cancers which would resolve themselves without treatment, or they find cancers earlier than they would otherwise. Again, with no improvement in treatment these will have a major impact on official survival figures as we can see from the following example. Take two men aged 65. One is diagnosed as having prostate cancer and starts treatment. The other one is not diagnosed till he is 70. Both could die at 72 since early treatment may not affect mortality. The first has an apparent survival rate of 7 years, the second only 2."

Statistics also don't tell us what any individual's likelihood of recovery will be. If we discover that we have a cancer for which there is a 50% chance that we will die within five years, some people will become very depressed, while others will interpret this to mean that there is a 50% chance that they will live longer than 5 years. Both are correct but the second patient has the better prognosis.

And what, in fact, does the original statement mean? Is the figure an average (calculated by taking the life-spans of a large sample of patients and dividing by the number of patients), This is normally how we interpret the figure but almost certainly this is not what the statement means. Almost certainly the figure is a median (calculated by determining the point of time where half the sample have died). A median-type calculation can say nothing of interest about the fates of those who live longer than five years - all of whom, for the sake of this argument, could live another twenty years without affecting the median calculation. Imagine a group where half the people died before 6 months and the other half lived ten years. The doctors would say you have only a 50% chance of living for 6 months! A much gloomier picture than we would get from saying, equally correctly, you have a 50% chance of living 20 years.

Even if the 5-year survival rate is only 10%, the positive patient will see that ten percent of the population survive somehow. Statistics demonstrate this clearly. How do these people do it?

This question cannot be answered yet for the reason that very little research is done on survival.

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